TEACHERS' RETIREMENT BOARD

INVESTMENT COMMITTEE

SUBJECT: Currency Task Force – Foreign Currency Policy | ITEM NUMBER: 4

ATTACHMENT(S): 2

ACTION: X | DATE OF MEETING: November 6, 2002

INFORMATION: ___ | PRESENTER(S): Elleen Okada
Michelle Cunningham, CFA
Callan Associates, Inc., Janet Becker-Wold, CFA

EXECUTIVE SUMMARY

This report represents the third and final installment in a series of presentations made to the Investment Committee that were designed to accomplish the objective approved for the Investment Branch for fiscal year 2002/2003, regarding the suitability of the current benchmark for the currency component associated with the Fund's strategic allocation to non-dollar equity assets. Based upon research involving discussions with Wall Street strategists, active currency overlay managers, other plan sponsors, and recent literature, plus a fair amount of debating the implications of alternative hedging policies, a team comprised of CalSTRS investment staff, Callan Associates (Callan), and Pension Consulting Alliance (PCA) reached the following conclusions:

- It is very difficult to forecast, with a high degree of consistency, the direction or duration of a move in currencies. What is certain is that the dollar will move against foreign currencies over time, thereby impacting the return realized by a U.S. investor. Sometimes this will be a favorable move, other times it will not.
- While currencies can be volatile on a stand-alone basis, when combined with equities, the equity volatility dominates. Therefore, contrary to the widely held belief that currencies add to risk, evidence shows that there are meaningful periods when maintaining the foreign currency exposure actually lowers the risk to the total Fund.
- Active non-dollar equity managers typically hedge currency exposures both implicitly and explicitly, and are generally given the discretion to hedge, in order to protect the translation value of their portfolios. Passive investments, however, are not protected from currency movements, either implicitly or explicitly, unless managed by a dedicated hedging program.
- There is no generally accepted "optimal" hedging policy, except that each fund must incorporate such issues as risk tolerance, investment objectives, the role that non-dollar

assets play in the total portfolio, and the potential costs of a hedging program, into the analysis.

BACKGROUND

CalSTRS adopted its Currency Hedging Policy in 1993, in conjunction with the Fund's strategic allocation to non-dollar equities [currently at twenty-percent (20%)], all of which have an unhedged performance benchmark. Fifty-percent (50%) of the non-dollar equity assets are managed externally on an active basis, and the other fifty-percent (50%) are managed externally on a passive basis. While the active managers are permitted to hedge their assets, and do so in the process of implementing their investment strategy, CalSTRS' Fixed Income staff developed and implements the System's currency hedging strategy for the passively managed portion.

The current policy and structure for the Currency Hedging Program have been in place for nearly a decade. While periodic reports and updates regarding the program have been presented to the Investment Committee on a regular basis, staff within the External Equity and Fixed Income Units joined with Callan Associates and Pension Consulting Alliance to study the suitability of the current performance benchmark, much like the research done on the domestic equity and fixed income assets last year. In the first presentation related to this project, made at the December 2001 Investment Committee meeting, staff presented an overview on currency. This initial presentation covered the major currencies, the size of the currency markets, and CalSTRS' exposure to these markets. The second presentation was made at the February 2002 Investment Committee meeting, and provided points of consideration when designing a currency strategy. The team then set out to further explore these issues in preparation for reporting its findings and recommendation to the Committee, taking into account the Fund's view toward risk, the absolute allocation to foreign assets and their management style, and the costs/benefits of implementing a currency policy.

DISCUSSION

Every U.S.-based investor holding assets outside the United States is confronted with the issue of how to manage the currency exposure. As per CalSTRS' current Currency Hedging Program Policies, the strategic objective for the Currency Hedging Program has been to *reduce the risk of the non-dollar equity portfolio by establishing controlled amounts of short currency positions in approved currencies, when there is the risk that the U.S. dollar may strengthen*. Based upon periodic evaluations over time, it has been determined that the program has achieved its objective of protecting the Non-Dollar Equity Portfolio against a rising dollar. However, past evaluations have also concluded that the program could benefit from the addition to the stated strategic objectives of reference to a specific risk measure (such as standard deviation of returns) and a defined time period.

These recommendations for a more formalized approach to managing the Currency Hedging Program necessitate further research into the various methods, and the implications, of implementing the Fund's philosophy toward currency management.

For reference purposes, Callan Associates has prepared **Attachment 1, the Currency Policy Review**, which represents a summary of the team's approach toward evaluating the policy benchmark decision. This review document also includes updates of charts and data from previous presentations, in order to assist in the process.

RECOMMENDATION

In light of these findings and conclusions, staff recommends, and Callan and PCA concur, that,

1. The Investment Committee reaffirms the adoption of an unhedged policy benchmark for CalSTRS' non-dollar equity assets (see **Attachment 2, Investment Resolution**); and,

2. The Investment Committee adopts the following statement of philosophy regarding currency management:

   > "CalSTRS believes that the Fund's Currency Management Program should emphasize the protection of the value of its non-dollar equity assets against a strengthening U.S. dollar." And,

3. Further research will be conducted into implementing the Fund's currency philosophy into a more formalized approach to currency management. The objective for this next phase of the project would be to develop implementation alternatives and, if applicable, policy revision suggestions for the Committee's consideration at some future meeting.

Prepared on October 18, 2002, by:

______________________________ Date: ____________________

Elleen Okada
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Michelle Cunningham
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Glenn Hosokawa
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Christopher Ailman
Chief Investment Officer

CURRENCY POLICY REVIEW AND RECOMMENDATION
CALIFORNIA STATE TEACHERS RETIREMENT SYSTEM

Currency management should be a conscious decision on the part of plan sponsors, regardless whether the ultimate decision is to hedge or not to hedge. The appropriate amount to hedge, if any, depends on many factors including currency's impact on the risk, return and correlation of existing assets. A sound hedging policy should take into account such issues as the plan's liabilities, funded status, risk tolerance, investment objectives, and any view of future currency movements.

Selecting a Benchmark

Currency exposures in a portfolio may be fully hedged (all foreign currency exposure removed), unhedged (all foreign currencies held), or something in between. There is an abundance of literature surrounding the choice of an appropriate hedging policy.

While the currency literature generally concludes that there is a minimum international allocation at which it makes sense from a cost standpoint to hedge, the Fund must consider its own attitude toward risk, the absolute dollar allocation to foreign assets, and the costs of hedging when formulating a currency policy. The table below summarizes some of the most commonly used hedge ratios/benchmarks and their general characteristics.

Hedge Ratio/ Benchmark	Do best when:	Cash Flow Impact	Implications for active management
0% Hedged	Dollar is weak/foreign currencies are strong	Low	Add value when dollar rises
50% Hedged	Moderate to strong dollar	Medium	Add value when dollar rises or falls
100% Hedged	Strong dollar/weak foreign currencies	High	Add value when dollar falls
Put Option*	Strong Dollar	Differs	Adds value when dollar rises or falls

**A put option benchmark is the goal of obtaining an asymmetrical payoff, limiting downside risk when the dollar rises, but keeping most of the upside potential when the dollar falls.*

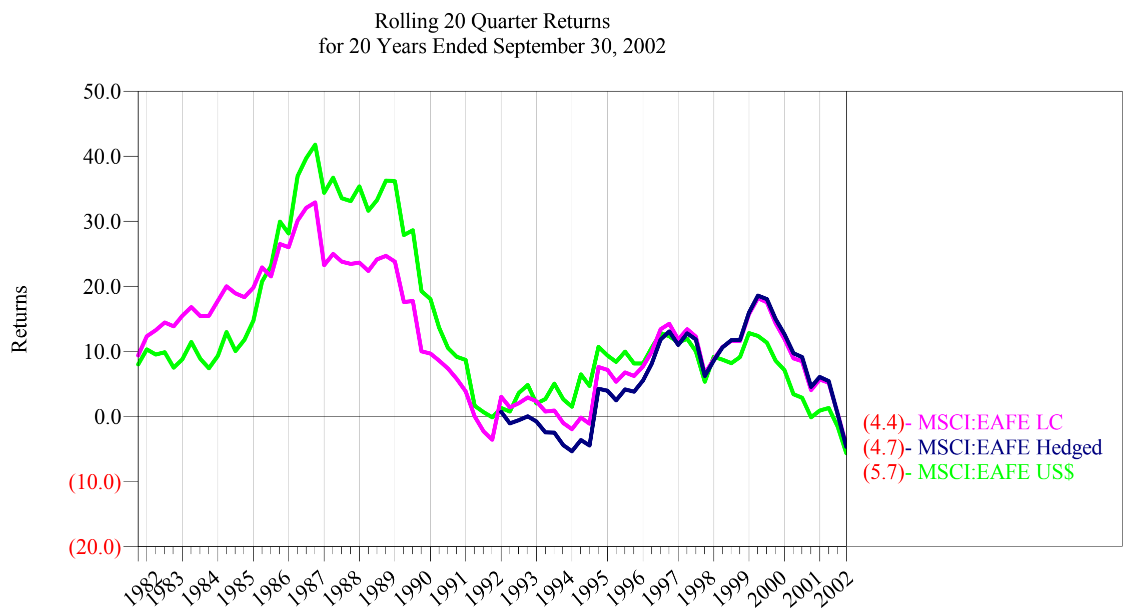
Unhedged (0% hedged) benchmarks will outperform fully hedged (100% hedged) when the dollar is weak. The opposite is true for the 100% hedged. The cash flow column identifies the degree to which cash flow is a factor under each benchmark. If hedging is conducted, cash will be required periodically to settle hedges or will be generated from hedging. All of these benchmarks may be managed actively or passively. The 0%, 50% and 100% hedged benchmarks can be implemented passively by executing forward contracts. The option benchmark can be achieved passively by purchasing a put option on a currency (or group of currencies) or actively through dynamic hedging.

Some generalizations about benchmarks may be drawn from the chart above. A 100% hedged benchmark will be most appropriate to a plan whose primary concern is risk reduction, is less sensitive to the issue of cash flow, and/or believes that the dollar is positioned for a rise. A 0%, or unhedged, benchmark is appropriate for a plan less concerned about volatility, more sensitive to the cash flow issues, and/or believes the dollar is in a long-term decline. A partially, or 50%, hedged benchmark has the advantage of minimizing the regret that may arise from a hedged or unhedged position. The disadvantage is that as a compromise position, it is never perfectly right, where the polar positions (0% or 100% hedged) have this potential. Free at-the-money options would theoretically provide the perfect payoff structure for plan sponsors -- capture all the gain when the foreign currencies rise and have no loss when currencies fall. Options are available on major currencies and can be grouped into a basket to replicate an underlying exposure. Unfortunately, options are not free. As a result, the cost and liquidity of options must be balanced against the amount of protection desired. Dynamic hedging strategies attempt to replicate the asymmetrical payoff of options (limited downside and unlimited upside) at a savings to the outright purchase of options.

Once the goals of currency management have been clearly identified, the plan sponsor will have a better idea of which benchmark fits their needs. A mean variance framework is frequently used to arrive at the appropriate benchmark; while it provides useful information, it is very sensitive to the inputs.

Historical Performance

Returns for the different benchmarks vary depending on the time frame. When the dollar was weak from 1985-1987, the unhedged benchmark (represented by the green line) outperformed the hedged (pink line) for subsequent rolling five-year periods. In the chart below, MSCI EAFE local currency returns are shown as a proxy for hedged returns due to the short performance history of the MSCI EAFE hedged index.

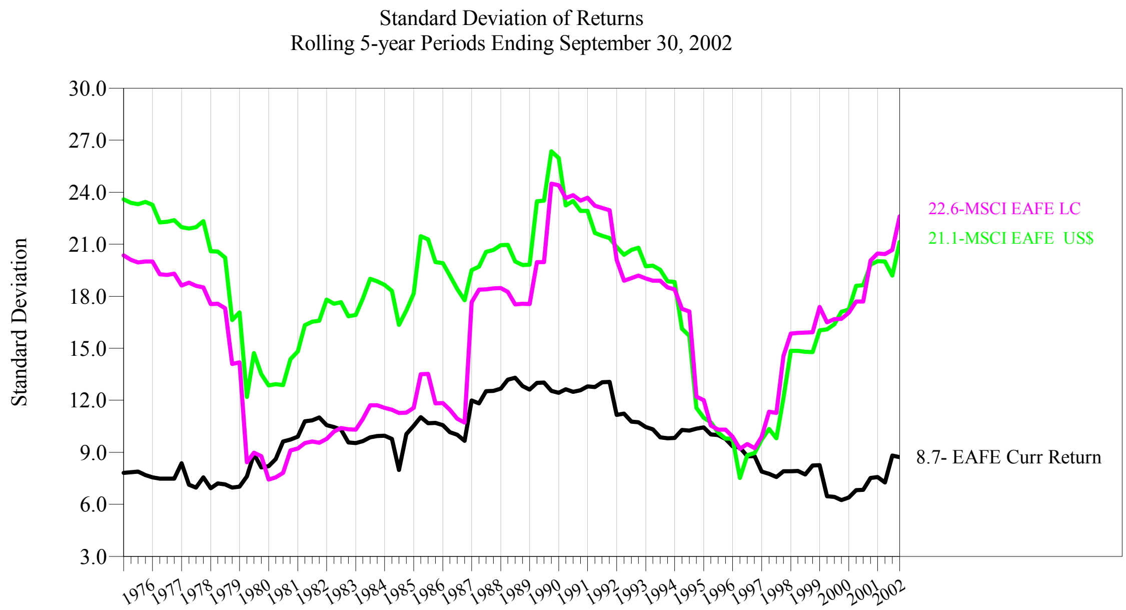


In the last couple of years, the strong dollar has hurt unhedged returns relative to the hedged alternative. While it is difficult to determine with a high degree of certainty the direction or duration of a dollar move, what is certain is the dollar will move against foreign currencies over time.

Historical Risk Profile

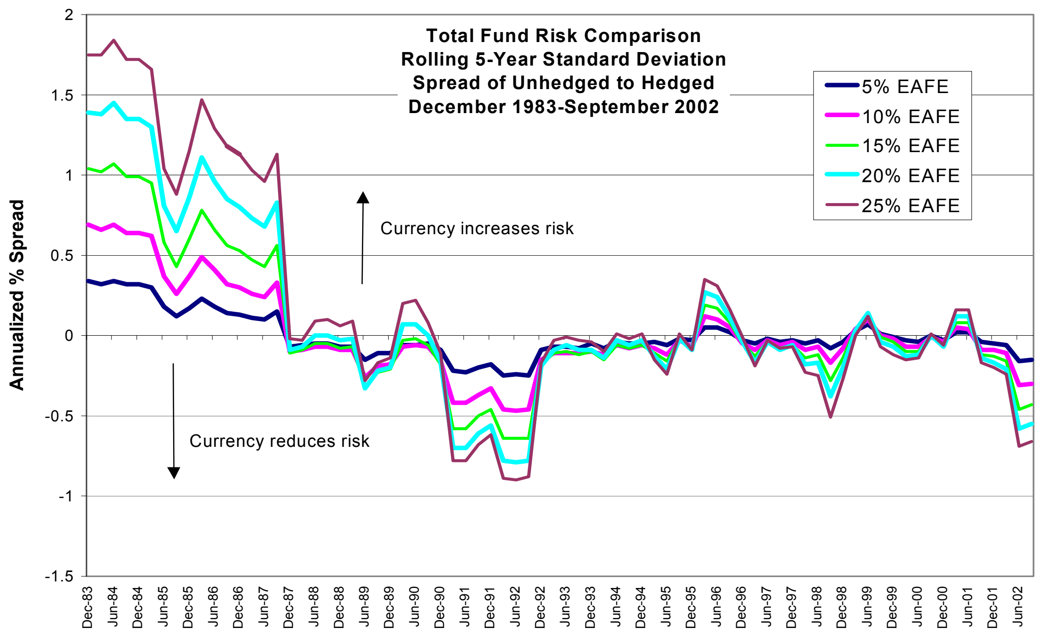
Risk inherent in currency movements can be evaluated at three levels, the total fund, the asset class and stand-alone, stripped from the equity investment.

The chart below shows the standard deviation of returns for EAFE unhedged and hedged (local currency returns as a proxy).



While arguably currencies are somewhat volatile on a stand-alone basis, when combined with equities, the equity volatility dominates. Rarely do international equity investors hold currency without the corresponding equity investment. The contribution that currency makes to the returns of EAFE can be estimated by looking at the difference between the U.S. dollar returns (green) local currency returns and (pink). This difference was large for rolling periods ending in the early 1980's (when there were large moves in the dollar against foreign currencies) but the difference since then has been much smaller.

At the fund level, the amount of risk that currency contributes is a function of the amount allocated to non-U.S. equities and the correlation of currencies to other asset classes. The chart below illustrates the effect currency has on the standard deviation of a hypothetical fund consisting of 60% U.S. equity (represented by the Russell 3000 index) and 40% fixed income (represented by the Lehman Govt/Credit index). International equity (represented by the EAFE index) is added to the fund in 5% increments replacing U.S. equity, maintaining the equity/fixed ratio at 60%/40%. Two different fund mixes are created when international is added – one adding EAFE unhedged and one adding EAFE hedged. The line plots the rolling 5-year difference between the standard deviation of the two mixes and represents the effect that holding the currencies has on total fund risk.



When the lines are below zero, holding currency reduces total fund risk. Contrary to the widely held belief that currencies are consistently additive to risk, the chart shows that there are meaningful periods when holding currency actually lowers total fund risk.

Hedging active versus passive exposure

Active international equity managers hedge currency exposures in primarily two ways – implicitly and explicitly. Managers implicitly hedge by making an assessment of the impact that currency movement will have at the company level. Portfolio managers must make judgements of the effects various currency scenarios will have on revenues and balance sheet items that are crucial to their determination of whether they think the company will be a profitable investment over the short and medium-term. Managers that also make country allocation decisions must consider the impact that currency movements will have on the investment attractiveness of the market as a whole. Active managers are generally given the discretion to execute foreign exchange transactions to protect the translation value of the investments. For example, if a portfolio manager believed the dollar would rise against the yen, they may choose to invest in exporters as they are the beneficiaries of dollar strength because Japanese goods become less expense to U.S. consumers. On the other hand, the rising dollar diminishes the value of a yen denominated security in dollar terms so the portfolio manager may elect to sell yen and buy dollars thereby insulating the translated value of the investment.

As a general rule equity managers do not frequently explicitly hedge if the currency benchmark is unhedged. This is because, while it may be in the Fund's best interest to hedge in a rising dollar environment, there is no real incentive for the equity manager to assume the benchmark risk from hedging. Also, currency management is not generally an area of expertise for international equity managers.

Passive investments, on the other hand, are not protected from currency movements either implicitly or explicitly unless covered by a dedicated hedging program. While active investments are at a minimum implicitly hedged there is no similar oversight in regards to passive investments.

Conclusions

Given the following:

- ✓ The overall objective of the currency hedging policy is to preserve the diversification benefits of holding foreign currencies while protecting the translation value of the assets in dollar terms. This will require either explicit or implicit hedging in periods when the dollar is strong relative to foreign currencies.
- ✓ The Fund is sufficiently diversified to withstand short-term currency fluctuations. While foreign currencies rise and fall against the dollar, the Fund assets are sufficiently diversified so as to withstand short-term volatility.
- ✓ Over rolling five-year periods, holding 20% in unhedged international equities does not consistently add to the volatility (standard deviation) of the total fund. Holding currencies in a total fund context may at times increase (decrease) the total fund risk but it is difficult to time these events.

After significant analysis and comprehensive discussions with the CalSTRS staff, Callan will support staff's recommendation that the fund maintain the current unhedged currency policy for the international equity allocation. This recommendation has been reached after careful consideration of the facts and circumstances unique to CalSTRS.

PROPOSED
RESOLUTION OF THE
TEACHERS' RETIREMENT BOARD
INVESTMENT COMMITTEE

SUBJECT: Currency Task Force – Foreign Currency Policy

Resolution No.___________

WHEREAS, the Investment Committee of the California State Teachers' Retirement Board is responsible for recommendations to the Board on investment policy and overall investment strategy for the management of the Teachers' Retirement Fund, a multi-billion dollar public pension plan; and

WHEREAS, the Investment Committee is charged with designating the Fund's benchmark for each asset class; And

WHEREAS, the Investment Committee has received and reviewed written recommendation and has heard oral presentations from Staff, And

WHEREAS, Staff recommends, and Callan Associates (Callan) and Pension Consulting Alliance (PCA) concur; Therefore, be it

RESOLVED, that the Investment Committee of California State Teachers' Retirement Board:

1. Reaffirms the adoption of an unhedged policy benchmark for CalSTRS' non-dollar equity assets; and
2. Adopts the following statement of philosophy regarding currency management:

   "CalSTRS believes that the Fund's Currency Management Program should emphasize the protection of the value of its non-dollar equity assets against a strengthening U.S. dollar." And
3. Orders further research to be conducted into implementing the Fund's currency philosophy into a more formalized approach to currency management to develop implementation alternatives and, if applicable, policy revision suggestions for the Committee's future consideration.

Adopted by:
Investment Committee
on November 6, 2002

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Jack Ehnes
Chief Executive Officer